

Digital Tokens and Financial Regulation

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1. Introduction

- Initial Coin Offerings (ICOs) are a rapidly growing form of corporate finance – in 2017 there were 18 a month and total of \$3.7 billion raised for the year while up to July 2018 there were 99 a month and \$17 billion had been raised (*Economist*, 1 September 2018)
- There are a whole range of interesting questions associated with ICOs including the fact that they can represent a new form of corporation, e.g., Streamr
- Zetsche et al. (2017, 2018) give the following classification and statistics for their hand-collected sample of over 1,000 ICOs out of 3,000 that they estimate have been made so far

Figure 1: ICO Taxonomy by Token Reference

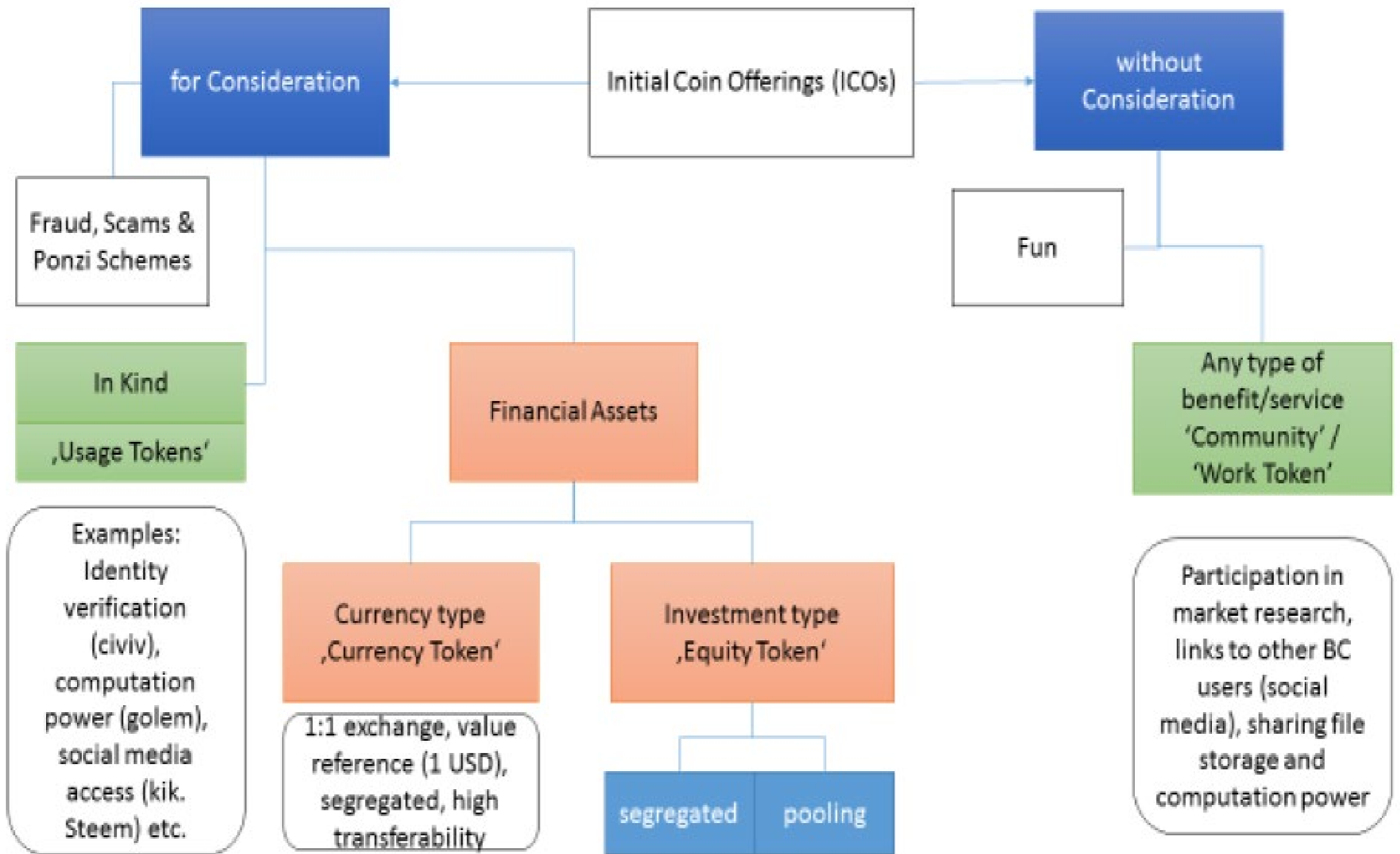


Figure 2: ICOs for Consideration by Reference Value

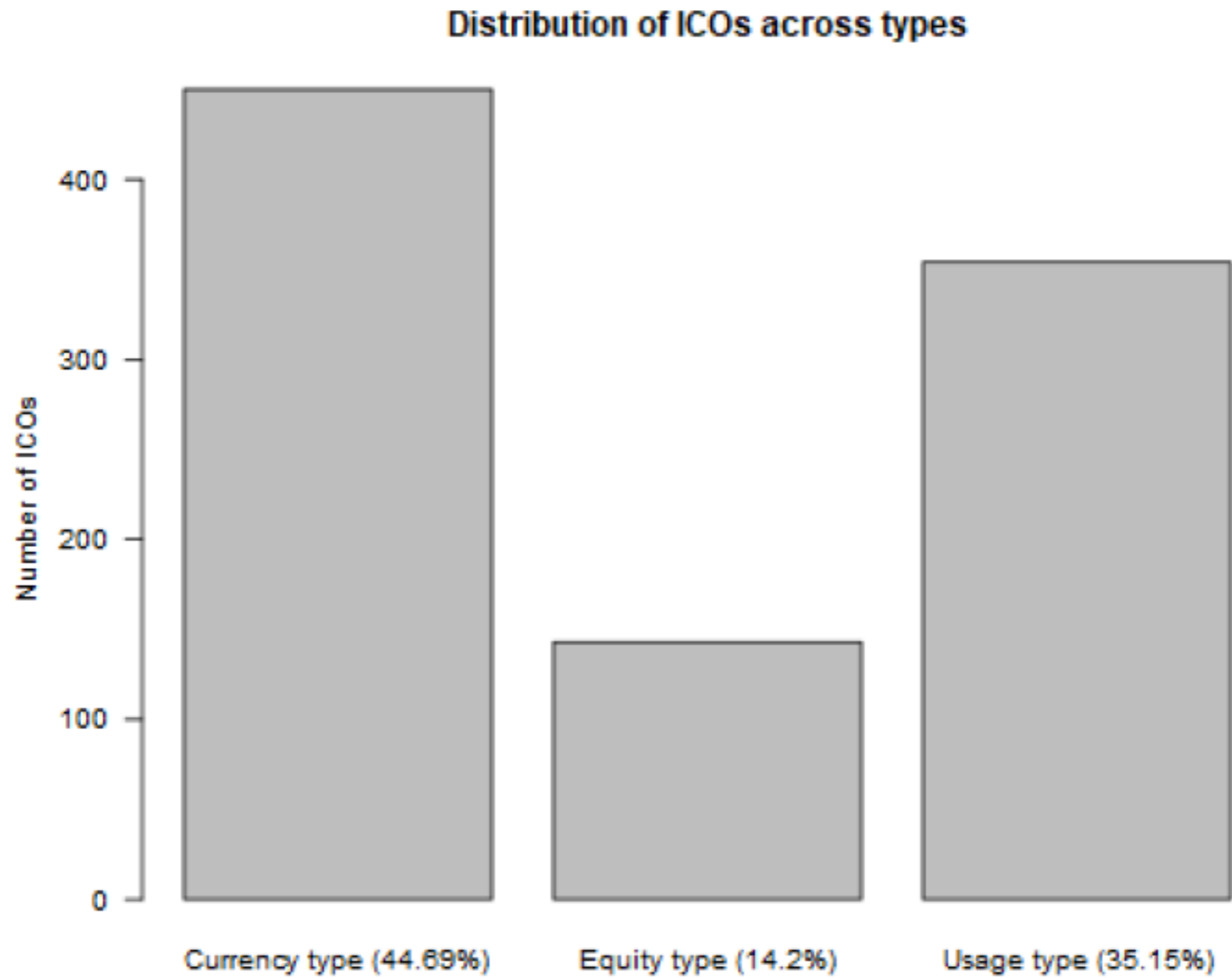


Figure 3: Distribution of ICOs by Market Cap.

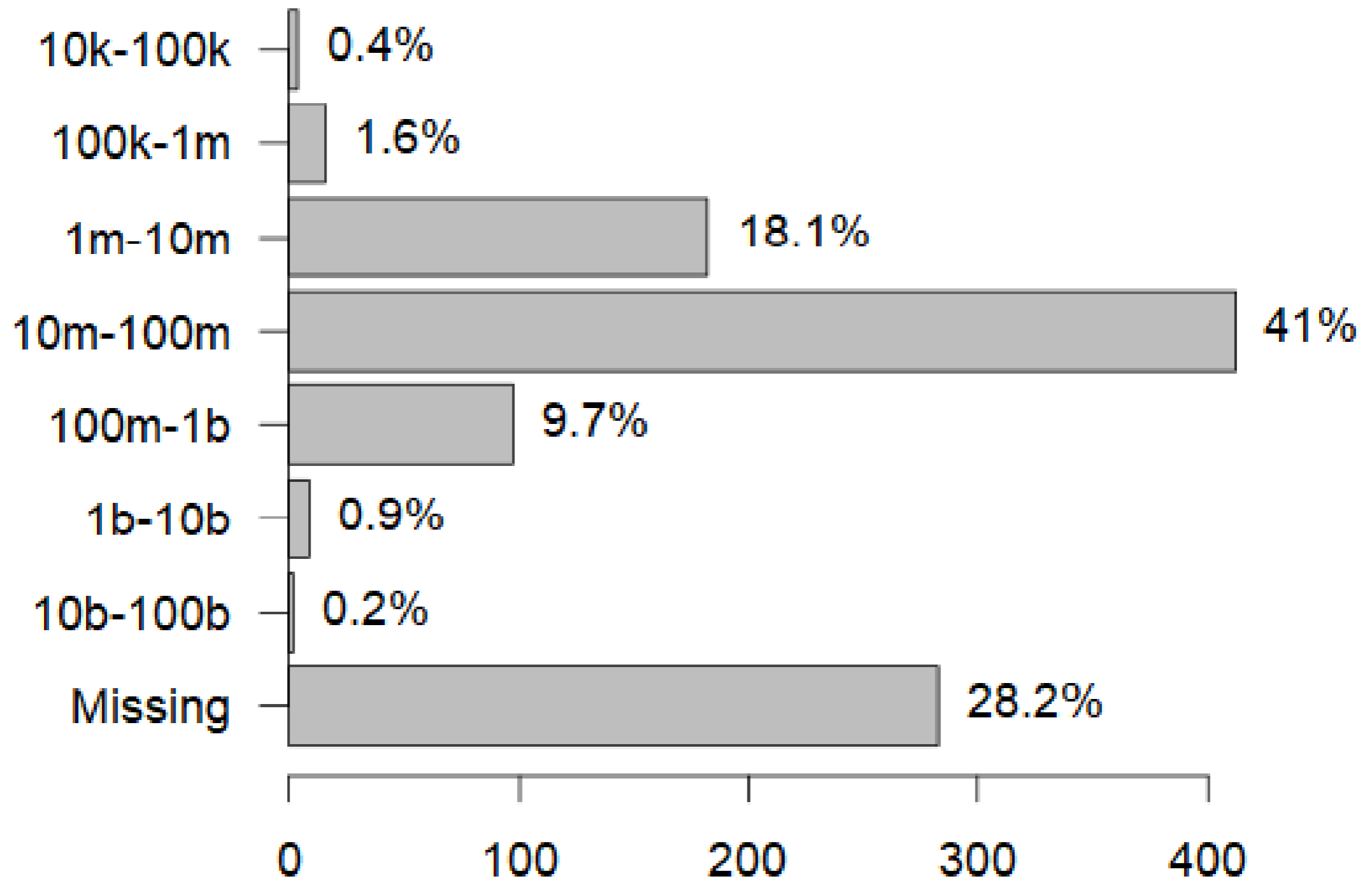


Figure 4: Geographical breakdown (by numbers of ICOs).

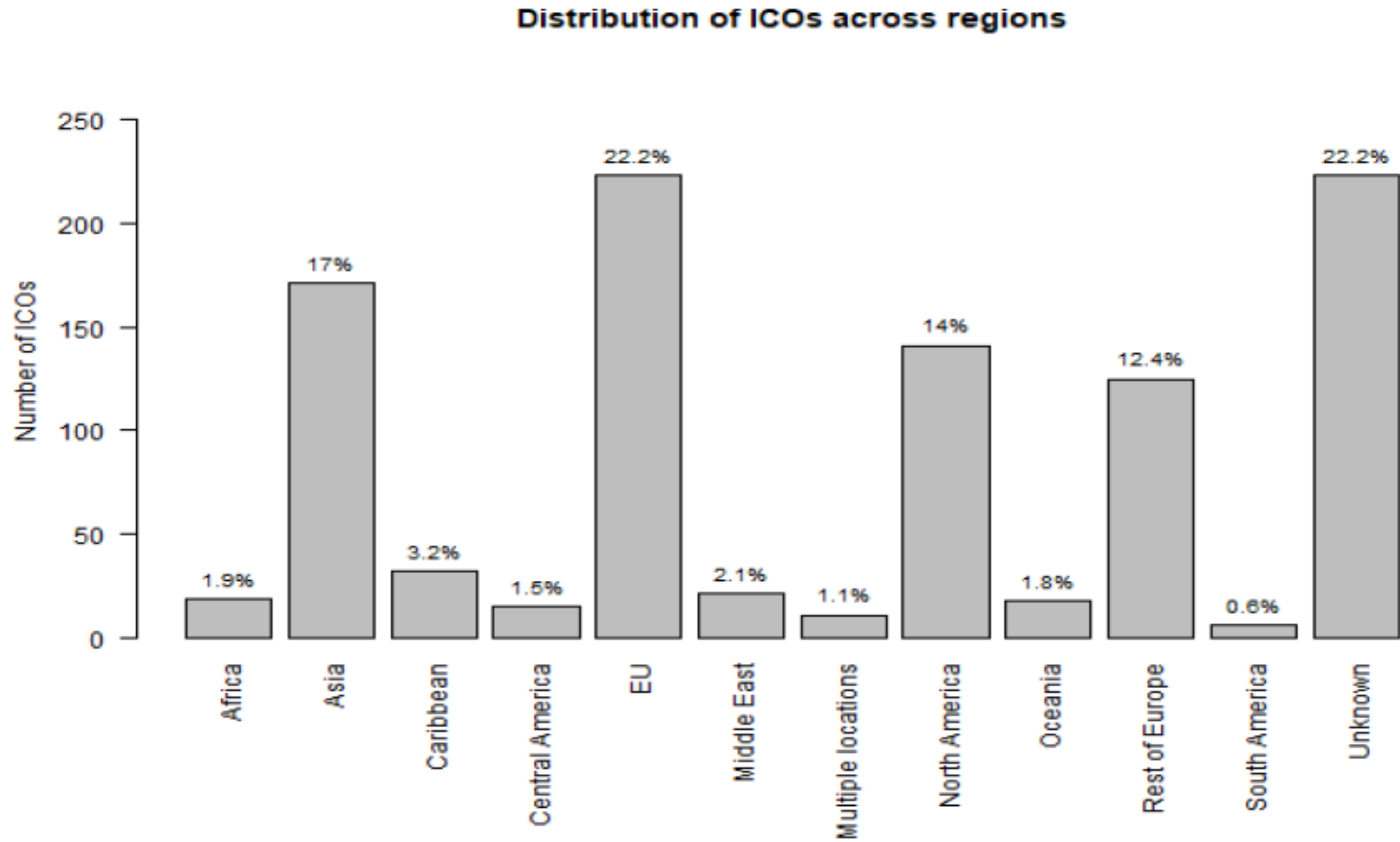


Figure 5: Top 10 ICO jurisdictions (by ICO market cap, at June 2018).

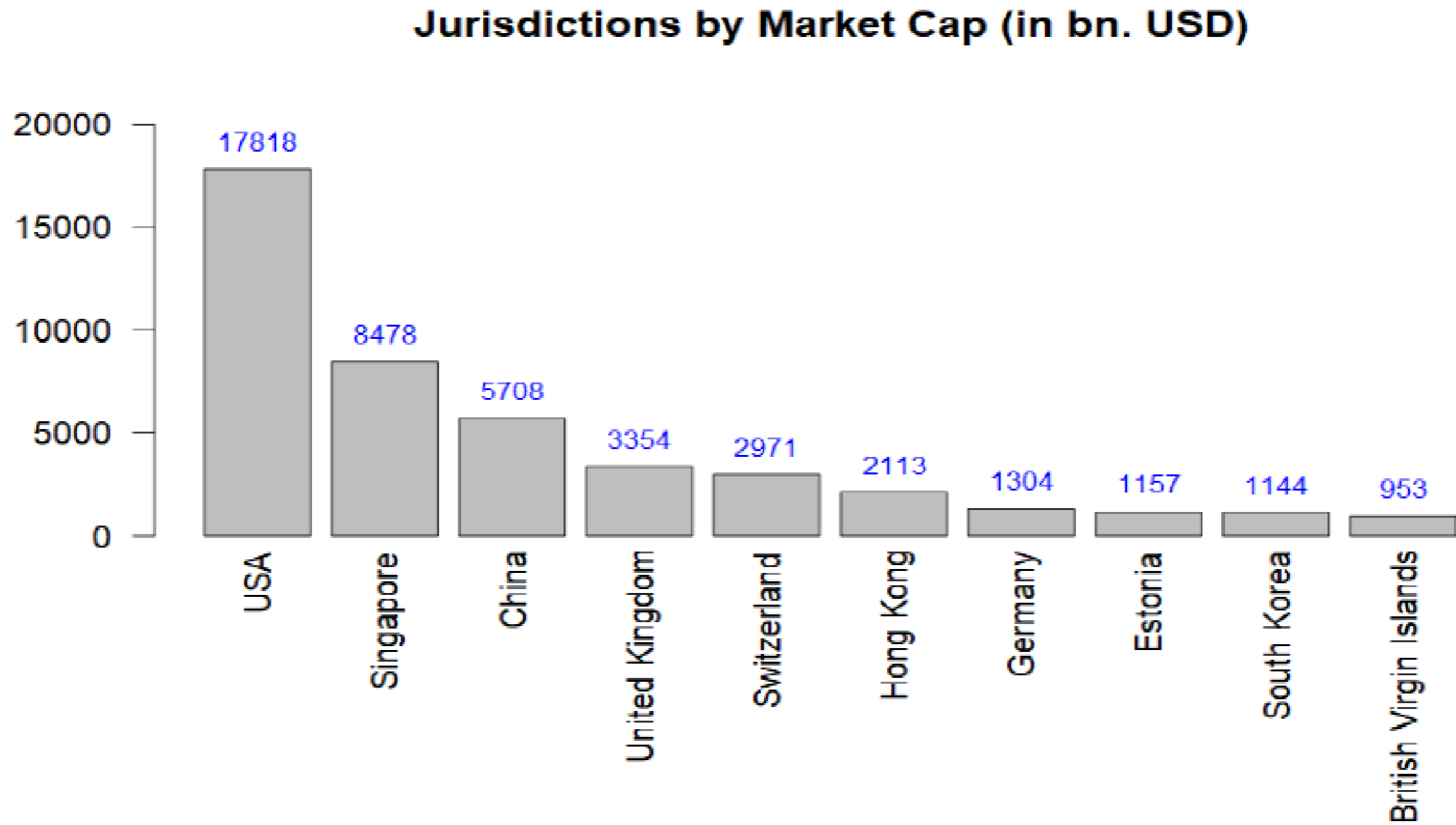
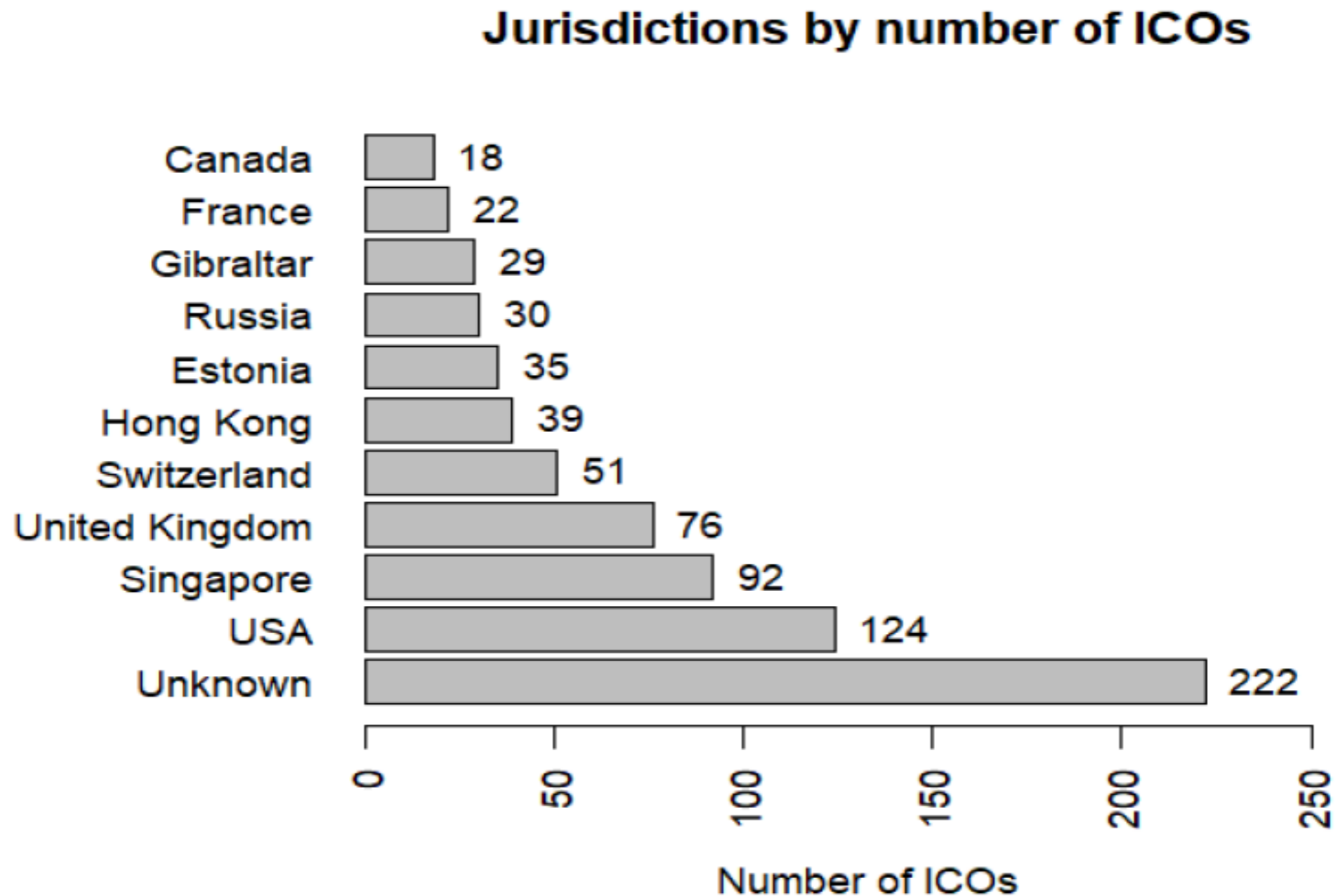


Figure 6: Top 10 ICO jurisdictions (by number).



Typical Sequence of Events with ICOs

- ICOs are done in a number of ways but a typical sequence of events is the following
- The promoters making the ICO issue a “White Paper” – these take many different forms but usually describe the nature of the technology being funded and the uses the technology can be put to
- Possible investors then have the opportunity to ask the promoters questions about the technology and the business that is being founded
- An initial sale of coins is made and the promoters use the funds to finish implementing the project
- Coins can be used on the platform and bought and sold for conventional currencies on cryptocurrency exchanges

Governance of ICOs

- Cohny et al. (2018) compare the governance of ICOs and protection of investors through computer code or what are known as “smart contracts” with traditional legal mechanisms in IPOs
- They focus on three issues regarding promises made in the documentation and whether they were coded in the smart contracts
 1. Did the promoters promise to restrict coin supply?
 2. Was the vesting of coins to promoters to provide incentives as promised?
 3. Did promoters retain the right to modify the code and was this disclosed?
- Cohny et al. found that ICO code and ICO disclosures often do not match

Advantages and Disadvantages of ICOs

- Kaal (2018) points to several advantages of ICOs compared to conventional ways of raising capital
 - ICOs enable borderless online sales with very few costs by enabling promoters to bypass the usual legal and jurisdictional hurdles by directly selling to a worldwide pool of investors
 - They provide excellent liquidity because global cryptocurrency exchanges provide continuous access to trading ICO tokens from the early stages of the business
 - ICOs provide liquidity to investors faster than other forms of capital formation – for example, venture capital funds can capitalize on existing profits early while avoiding long and complex processes leading up to an IPO or sale
- The main disadvantage of ICOs is the lack of regulatory oversight and legal recourse to the promoters

Example of a White Paper - Streamr

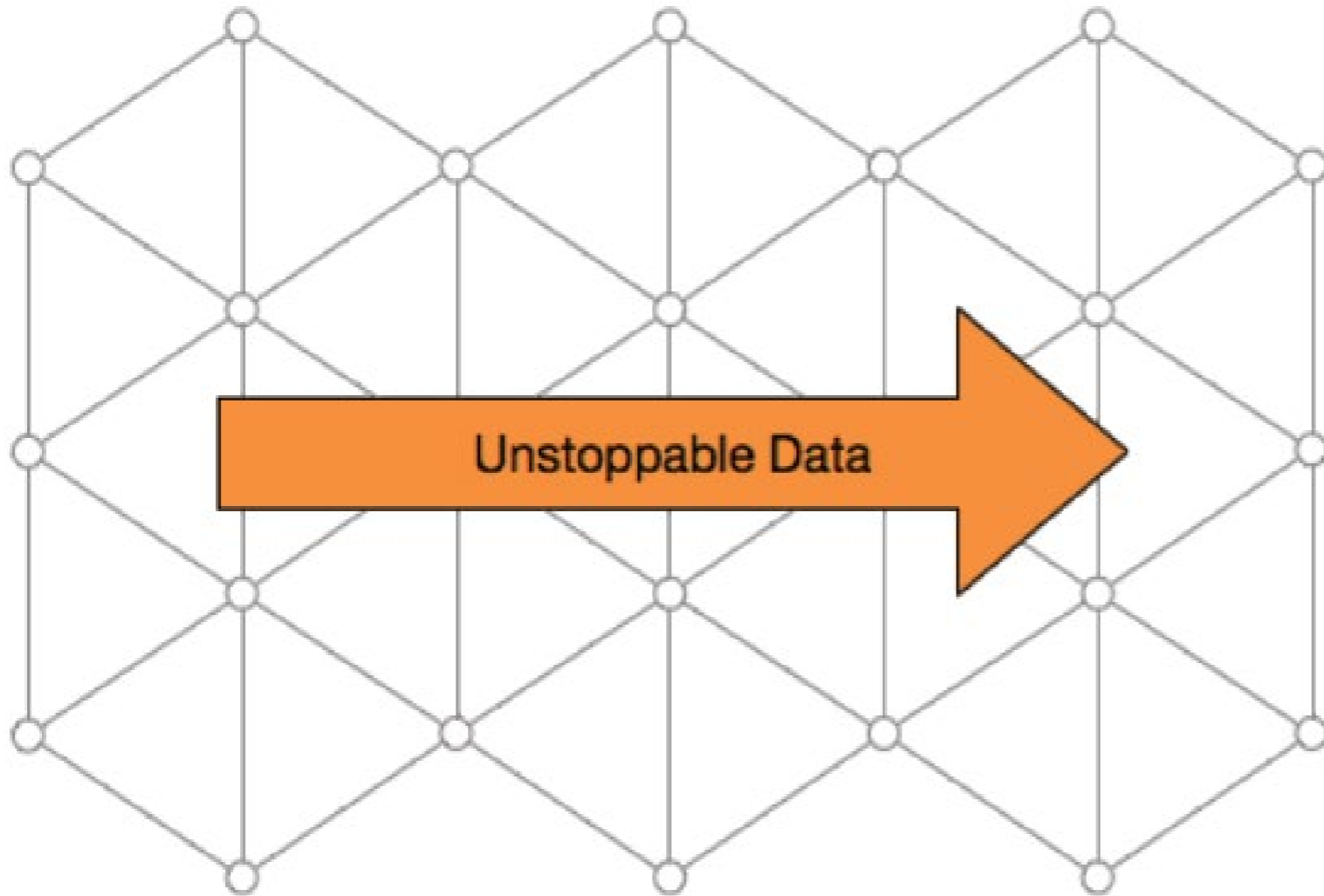
Unstoppable Data for Unstoppable Apps: DATAcoin by Streamr

streamr

July 25th, 2017

Version 1.0

This whitepaper is for information only and does not constitute an offer or any kind of investment advice. Any element of this whitepaper may undergo significant changes as the project further develops.



Dapps



Data marketplace



Computation



Storage

Streamr vision

Streamr delivers unstoppable data to unstoppable applications. It is the real-time data backbone of the global supercomputer. It is a decentralized network for scalable, low-latency, untamperable data delivery and persistence, operated by the DATAcoin token. Anyone — or anything — can publish new data to data streams, and others can subscribe to these streams to power Dapps, smart contracts, microservices, and intelligent data pipelines.

To incentivize user participation in the network, there's a built-in mechanism for data monetization. Valuable data from security exchanges, connected devices, IoT sensors, and social media can be offered to companies, developers, and private citizens. Machines can autonomously sell their data, get paid, and purchase the data they require. A global market for real-time data emerges, with built-in data provenance, encryption, and access control.

Alongside the decentralized data network and marketplace, the full Streamr stack includes a powerful analytics engine and a UI for rapid development of real-time Dapps. Data streams, smart contracts, and decentralized computing resources can be interconnected in a low-code environment using high-level building blocks. Streamr will be the easiest place to create real-time, data-driven, and trustworthy blockchain applications.

A revolution is taking place where centralized cloud services are one by one being superseded by tokenized, decentralized solutions. Golem, for example, replaces Azure Virtual Machine, and IPFS replaces Azure Blob Storage. Streamr is proud to join the revolution by providing a decentralized solution to messaging and event processing, replacing platforms such as Azure EventHub and Azure Stream Analytics.

Streamr ICO

- The ICO raised 30 million CHF
- There are a fixed number of DATAcoins
- They are not mined but can be earned by selling data
- More information can be accessed at

<https://token.streamr.com/>

<https://coinmarketcap.com/currencies/streamr-datacoin/>

Returns on ICOs

- Many ICOS are scams but many are not
- Benedetti and Kostovetsky (2018) find the following:
 - 179% average return from ICO price to the first day's opening market price on average 16 days later
 - With -100% attributed to ICOs that don't list within 60 days the average return falls to 82%
 - During the first 30 days of trading, the average buy and hold returns are 48%

Economic Analysis of ICOs

- There have been a number of economic analyses of ICOs
- A good example is Catalini and Gans (2018)
 - They develop a partial equilibrium model where an entrepreneur is raising funds for an innovative venture through an ICO and compare it with raising funds through a traditional equity offering
 - The products of the firm are paid for with the coin that is issued
 - Their main result is that issuing equity is superior to issuing coins because it can monetize the future equity return stream and so raise more money

Economic Analysis of ICOs (cont.)

- How applicable is the analysis of Catalini and Gans (2018) to ICOs such as Streamr?
- The purpose of the Streamr project is to develop a trading platform or ecosystem for continuously available data
- Prices in terms of DATAcoin are determined endogenously in a perfectly competitive environment
- The platform is based on many nodes and ultimately will be **fully autonomous with no human intervention** – there is no stream of equity returns
- The incentives to finish the platform are provided by the appreciation in the value of the DATAcoins

Regulation of ICOs

- ICOs raise a whole set of interesting regulation issues
- Often ICOs are structured to avoid regulation – in 51% of Zetsche et al.'s (2017) sample, investors from certain countries were excluded from participation while 80% have no mention of the regulatory status of the ICO
- Streamr website starts with:

By continuing you agree that you are not a citizen of the following countries: The United States of America, Japan, Finland, or any other jurisdiction in which it is not permissible to participate in token crowd contributions.

Regulation of ICOs (cont.)

- Some examples of regulation in different countries
 - Outright ban (e.g., China, South Korea)
 - In the US the SEC in July 2017 released a Report of Investigation that found a blockchain-based token qualified as a security requiring registration under the Securities Act of 1933
 - Regulatory warning (e.g., US, Singapore, Hong Kong, UK, Australia, Germany, EU's ESMA)
 - The UK's "Regulatory sandbox" approach is helpful for allowing Fintech innovations
 - Switzerland provides a particularly good example of a regulatory system that encourages ICOs by being more permissive

Switzerland's FINMA Approach

- Selected excerpts from FINMA's website
([file:///C:/Users/hallen/Downloads/20170929%20FINMA%20Aufsichtsmitteilung%2004%202017%20\(1\).pdf](file:///C:/Users/hallen/Downloads/20170929%20FINMA%20Aufsichtsmitteilung%2004%202017%20(1).pdf))

FINMA recognises the innovative potential of distributed ledger/blockchain technology. It welcomes and supports all efforts to develop and implement blockchain solutions in the Swiss financial centre.

...

Swiss legislation on financial markets is principle-based; one such principle is technology neutrality.

Switzerland's FINMA Approach (cont.)

...due to the underlying purpose and specific characteristics of ICOs, various links to current regulatory law may exist depending on the structure of the services provided. This concerns the following areas in particular:

- Provisions on combating money laundering and terrorist financing: the Anti-Money Laundering Act applies where the creation of a token by an ICO vendor involves issuing a payment instrument. If this is the case, other supervisory issues may be effective for third parties, especially for professional cryptobrokers or trading platforms which carry out exchange transactions or transfers with tokens (secondary trading with tokens).

...

A Suggestion for ICO Regulation

- The blockchain community in Zug has been fairly successful in developing innovative approaches and providing funds to successful firms like Streamr
- However, preventing scams does seem an important thing to do but without preventing innovation
- One possible approach is similar to the Rule 144A restrictions on private placements that have been quite successful in the US – ensure that only qualified investors (both in terms of computer science, the law and finance) can participate in ICOs

Concluding remarks

- ICOs are becoming an increasingly important way of raising funds for innovative ventures
- People with the combination of computer science, legal and finance skills needed to understand ICOs are rare
- One particularly interesting aspect is the development of fully autonomous firms that operate without human intervention
- Regulation should aim at excluding the unknowledgeable from ICOs while providing the knowledgeable with significant freedom to innovate
- How should Singapore regulate ICOs going forward?

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